Follow-up	Late Loss (mm)	Late Loss Index	Larger MLD at Follow-up
6 Months	−0.19 ± 0.3	−0.16	8/14 (57%)
24-Months	−0.16 ± 0.4	−0.17	8/14 (57%)

Conclusions: IR results in lower late loss rates and less vascular constriction following PTCA than previously reported. This may alter the need for stenting for prevention late VC.

4:45

865-4 Percutaneous Transluminal Myocardial Revascularization (PTMR): Procedural Results and Early Clinical Outcome

F.A. Shawl, U. Kaul, B. Singh, G. Rigali. *Batra Hospital, New Delhi, India, Washington Adventist Hospital, Takoma Park, MD, USA*

Surgical transmyocardial laser revascularization (TMR) has been reported to improve clinical outcome in pts with refractory angina who are not candidates for PTCA or CABG. We report a nonsurgical transcatheter technique, PTMR in 8 such pts (mean age 63 ± 11 years). All 8 had Class III (2 pts) or Class IV (6 pts) angina. All had evidence of reversible ischemia and had an ejection fraction >25%. PTMR was performed using 9F Eclipse Holmium laser fibreoptic system. Laser channels were made in the LV, guided successfully in all pts by simultaneous fluroscopy and multi-plane transesophageal echocardiography (TEE). A total of 13.5 ± 4 channels (5 mm deep) were lased in the segment of the LV corresponding to the target coronary artery. Total procedure time was 50 ± 8 mins, with total fluoro time of 13 ± 7 mins. No complications were encountered. All pts experienced improvement in anginal symptoms and all were discharged from the hospital within 48 hours after lasing. Follow-up at 2 months revealed no deaths and all had sustained clinical improvement (Class I in 5 and Class II in 3). On follow-up stress test 7 of 8 pts were able to exercise for at least 6 mins, completing 2nd stage of Bruce protocol without angina. Thallium images showed significant improvement in 3 pts and no change in 4. Six months follow-up studies will be presented.

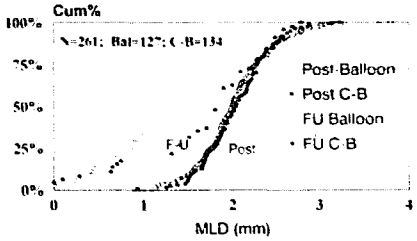
Conclusion: PTMR appears to be a feasible alternative to TMR in pts with refractory angina not amenable to any form of revascularization.

5:00

865-5 Angiographic Follow-up of Cutting Balloon vs Conventional Balloon Angioplasty. Results of the CUBA Study

C. Morris, A. Bethencourt, M. Gomez-Recio, P. Bordes, J. Auge, R. Melgares, J. Hernandez, J. Zueco, J. Dominguez, J. Goicolea. *Hospital Clinico San Carlos, Madrid, Spain*

The CUBA Study is a randomized and multicenter study comparing Cutting Balloon (CB) vs conventional angioplasty (Bal) in single de novo lesions. We report here the immediate results as well as the angiographic follow-up. A total of 306 patients were finally included (153 were randomized to Bal and 153 to C-B). Clinical (age 59 vs 57; female gender 20 vs 19%; Diabetes 2 vs 1.3%) were similar. Baseline lesion characteristics were also similar (types B1 + B2 63% in Bal vs 67% in CB). Protocol success was obtained in 136 (89%) in the Bal group (18 required Stents) vs 139 (91%) in C-B 12 patients required Stents + 1% crossed over to balloon PTCA. Minimal lumen diameter (MLD) increased from 0.5 ± 0.5 to 2 ± 0.4 mm (gain = 1.5 ± 0.4) in the Bal group vs 0.6 ± 0.6 vs 2 ± 0.4 (gain = 1.45). P = NS. There were few major complications (3% in Bal vs 2%, P = NS) with no deaths in either group. F-U angiography and analysis was performed in a per protocol principle and was performed in 96% of patients. Restenosis was 42% in Bal vs 30% in CB (RR = 1.66, 95% CI = 1–2.8; P = 0.047). MLD at FU was 1.5 ± 0.7 in Bal vs 1.66 ± 0.8; Loss 0.52 ± 0.7 vs 0.37 ± 0.8 P = 0.09).



Conclusion: CB provides similar acute clinical and angiographic results as compared to Bal. A moderate benefit in restenosis with CB is observed due to a smaller late loss.

5:15

865-6 Percutaneous In-Situ Coronary Artery Bypass (PICAB): A Novel Myocardial Revascularization Technique

S.N. Oesterle, A.C. Yeung, M. Hayase, R.C. Robbins, P. Fitzgerald, P. Yock, R. Kernoff, M. Tumas, R. Virmani, J. Makower. *Cardiac Catherization & Coronary Intervention Laboratories, Cardiovascular Medicine, Stanford University Medical Center, Stanford, California, USA*

The human coronary venous circulation has favorable anatomy and physiology that permits it to be used as an in-situ coronary artery bypass graft. We have repetitively demonstrated the feasibility of constructing such bypasses in a porcine model. Working through the Coronary Sinus (CS), arterio-venous connections are made with a novel catheter system that can precisely locate the target arterial segment. Both intravascular ultrasound and fluoroscopy are used to help position and orient the catheter properly. The catheter consists of an extendable needle that is used to puncture the artery (CA), making the initial venous - arterial connection. A guidewire (GW) is then delivered from the coronary vein (V) to CA, providing a "rail" over which a series of other devices can be delivered. A channeling device is then passed over the wire creating a fistula, and allowing flow between the two vessels. Following creation of the proximal and distal V to CA connections, the venous segment is isolated by means of specially designed occlusive devices. Isolation of segments of the venous anatomy did not eventuate in untoward physiologic consequences. The creation of multiple in-situ bypasses is feasible utilizing this technique. PICAB can be accomplished in an animal model and holds promise for human application. Hemodynamic, angiographic and histologic data from porcine PICAB studies will be presented.

866 Intravascular Ultrasound Insights Into the Biology and Natural History of Atherosclerosis

Tuesday, March 31, 1998, 4:00 p.m.–5:30 p.m.
Georgia World Congress Center, Room 255W

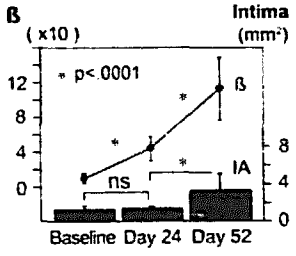
4:00

866-1 Impaired Vascular Distensibility Prior to Intimal Proliferation in Transplant Vasculopathy

Y. Honda, J.D. Perlroth, M. Hayase, N.P. Briffa, T.S. Ikonen, J.F. Gummert, Y. Kobayashi, C. Barlow, B. Hausen, P.J. Fitzgerald, R.C. Robbins, P.G. Yock, R.E. Morris. *Stanford University, Stanford, CA, USA*

Transplant vasculopathy remains a major limitation to long term survival in heart transplantation. To assess the time course of transplant vasculopathy in a primate model of chronic allograft rejection, four monkeys were studied using serial intravascular ultrasound (IVUS) with simultaneous blood pressure (BP) recording at baseline, day 24 and day 52 after aortic transplantation. 32 cross-sections (isograft: 12, allograft: 20) were matched, and vessel dimensions [lumen area (LA), total vessel area (VA), and intimal area (IA = VA − LA)] were measured at end-diastole and end-systole. A stiffness index β, considered to be independent of BP, was calculated with the following formula: β = [ln (systolic BP/diastolic BP)]/(ΔLA/end-diastolic LA).

Results: In the allografts, a progressive increase in β was observed at both day 24 and day 52 (line chart) while IA significantly increased only at day 52 (bar chart). In contrast, the isografts showed no significant change in β or IA.



Conclusion: Impaired vascular distensibility of the allografts occurred prior to onset of significant intimal hyperplasia, and deteriorated throughout the study period. These findings suggest that early abnormality in vascular distensibility detected by IVUS might identify patients at risk for subsequent progression of transplant vasculopathy.